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Rebuilding the Army's Electronic Warfare Capability

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From the day Guglielmo Marconi established his first radio communication in 1895, people have sought to harness the capabilities of the electromagnetic spectrum (EMS) for a multitude of industrial and military purposes. The result has been a steady drum beat of EMS technological advancement resulting in both the commercial and military applications.

The primary factor driving civilian deployment of wireless network communications was the low cost of deployment. The commercial sector has produced and deployed a sophisticated communications architecture that now circles the globe. These microwave, cellular and internet technologies now link places that have never enjoyed access to outside communications before at an extremely low cost. This connectivity has changed the social, cultural and economic relationships of people around the world. Correspondingly, it has also altered the ways and means people use to engage in conflict and conflict resolution.

From the military perspective, this geometrical technological explosion has created a mechanism for easy, anonymous access to would-be terrorist groups and global insurgents movements able to use these sophisticated off-the-shelf communications technologies. A prominent example of this emerged on the battlefield in Iraq. Al Qaeda-Iraq (AQI) effectively employed the full capability of this emerging capability against coalition forces at the tactical, operational and strategic levels. Initially AQI used common every day, off-the-shelf wireless devices to ambush coalition patrols by detonating remote controlled improvised explosive devices (RCIEDs). AQI also used cell phones and walki-talkies for command and control purposes and logistics coordination. At the strategic level, AQI was able to leverage the EMS by wirelessly broadcasting videos of these tactical successes to an anti-coalition audience, bolstering their recruiting efforts. These videos were also found on the World Wide Web. AQI effectively leveraged EMS technologies to create a sophisticated information operations campaign that was achieving strategic impact in Iraq.

The Army, recognizing that it was facing a determined, adaptive enemy utilizing these technologies, immediately began searching for a counter to this emerging AQI threat. Unfortunately, the Army soon found that it had a severe lack of trained electronic warfare personnel to counter these low-level EMS threats. Moreover, due to the asymmetric advantages these types of weapons conveyed to their users, the Army will likely face this class of threat on battlefields for the foreseeable future.

Acknowledging this newly-emerging high threat environment, Army leadership took sharp action to organize, recruit, equip, train, and deploy highly capable EW personnel capable of effectively countering such emerging threats. The Army set about re-institutionalizing electronic warfare throughout the Army and intended to do it as quickly as possible!

Perspective – A Brief Historical Background

Why did the Army find itself in circumstances in which it was ill-equipped to counter such EMS threats? To understand how the Army found itself with such a lack of Army EW capability at the outset of the Afghanistan conflict, one must take a look back to the fall of the Berlin Wall. This lack of institutional EW capability and capacity can be attributed to two primary factors. First, was the evaporation of our traditional Cold War threat, the Warsaw Pack Armies; secondly was the evolutionary path of EW capabilities within the Army.

During the Cold War era, the NATO Armies faced a well defined Warsaw Pact adversary with a vast signals and electronic warfare capability. This well defined threat had to be countered in order to deter conflict. And if deterrence failed, NATO had to defeat the Warsaw Pact on the battlefield. The Air-Land Battle doctrine demanded it. Out of necessity the NATO Allies developed sophisticated EW capabilities to achieve this goal. NATO needed a very clear picture of the Warsaw Pact Electronic Order of Battle to identify the electronic signatures of Soviet C2 systems, radars, and jammers. NATO used this understanding to establish and maintain its EW capability to electronically jamming or destroying such capabilities, if it was required.

During this era, U.S. and its Allies established and maintained EW capabilities and units specifically organized and equipped to identify and locate enemy C2 nodes, specific radars and other specialized weapons systems. The US and Soviets were soon in a "tit-for-tat" EW capability escalation cycle that was becoming extremely costly. In an effort to limit Soviet understanding of US EW capabilities, new EW developments were highly classified. The unfortunate result was that these EW units and their highly classified capabilities were segregated away from mainstream conventional Army forces. These EW elements stopped training and exercising with the conventional forces. Over time this separation caused EW to evolve into a highly specialized and much underappreciated sub-component of the U.S. Army Military Intelligence community.

When the Berlin Wall came down and the Warsaw Pact Armies melted away, the once formidable threat had evaporated. Correspondingly, the National leadership sought a "Peace Dividend". No longer seeing the need to maintain such an expensive and highly specialized capability, Army leadership divested itself of an asset it no longer seemed to need. Subsequently, combat formations were planned without taking into consideration EW requirements, no new doctrine was written for more than a decade, and what was left of the Army's residual EW capability slowly atrophied to the point that it became ineffective. Emblematic of this change was the fact that the Army's Military Intelligence community trained its last dedicated EW Officer (EWO) in the 1990s.

And so it was that, by September 11, 2001, there was little EW capability to be had in the U.S. Army; those forces that it did have were small, intelligence oriented and compartmented away from the main body

of the force. Fortunately, while the Army had divested itself from EW for the reasons mentioned above, the US Air Force (USAF) and US Navy (USN) had continued to maintain this critical technical capability and professional skill set. (The Army would later have to call upon the Joint EW community to cover the gap while it took steps to develop its own organic EW capability.)

And thus the Army found itself in a complex situation. The resulting conjunction of the unexpected—and highly effective— employment of off-the-shelf wireless technologies by insurgent forces and the greatly reduced Army tactical EW capability to deal with such a capability created a "Perfect Storm" on the Iraqi battlefield. The Army was operating in complex, unfriendly urban terrain, facing a motivated, adaptive enemy using Radio Controlled Improvised Explosive Devices (RCIED) to inflict significant casualties on coalition forces. Moreover, the enemy was using global wireless and cellular technologies to synchronize their command and control efforts world-wide while also using the World Wide Web for Information Operations to post battlefield successes – including produced segments featuring successful RCIED attacks – on the internet to recruit jihadists to their cause and undermine coalition commitment to the cause.

These circumstances compelled the Army Leadership to take the initiative to re-invigorate EW restoring it as a critical combat capability on the battlefield; a combat capability that could very well determine strategic success or failure in the overall conflict. The key to success on the Iraqi battlefield was to rapidly fielding of EW capability. Lacking sufficient internal capability, the Army turned to the Joint Force for a interim solution to EW support requirements. As a result, more than 300 Navy, Marine and Air Force EWOs joined Army forces on the ground in Iraq to operate the equipment necessary for defeat the AQI EW capabilities.

Among the first to recognize and vocalize the need for and to push for rebuilding the Army's own capability was LTG Peter W. Chiarelli, then CG, Multi-National Corps Iraq (MNCI), who dispatched a memorandum to General Richard A. Cody, then Vice Chief of Staff of the Army (VCSA), in 2006 stating that the Army's EW was broken which was costing the lives of our Soldiers.[1] Gen Cody responded,

> "I concur with you that EW becomes an Army core competency as soon as possible. We must execute now. Soldiers must be trained at all ranks and at different tiers in EW Skills. Therefore, effective immediately, Army Commanders at all echelons will assume responsibility for Army EW missions and personnel. All Army Battalion and above J-level units will have Army trained EWOs per HQDA G3 directive…" [2]

This high level of concern gelled the consensus among the Army Leadership for immediate action. The Army made the institutional commitment to make EW a core military capability and embarked upon an aggressive campaign to rebuild EW. The objective was to achieve operational and tactical dominance of the EMS at unit level.

From the outset, it was evident that this effort would take a huge institutional and resource investment to effectively change Army culture. To quickly revitalize EW capability within the Army, it would have to

develop a completely new concept for the employment of EW in this emerging operational environment. Something had to be delivered to the field immediately to deal with the current threat. A major objective of the process would be to instill in every Soldier a basic understanding of EW and how its capabilities would help keep him or her alive on the battlefield. However, there was broad recognition that a full institutional (Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities (DOTMLPF)) analysis process would have to be implemented in order to ensure adequate EW capabilities were developed and distributed across the battlefield.

The Army Taking Action - What the Army is Doing about the Problem

It is unfortunate that when an institution the size of the Army undertakes an important and significant change, the organizational inertia of the institution itself is often the hardest obstacle to overcome. This inertia is not due to bad intentions on anyone's part. It is largely due to the nature of a bureaucracy the size of the Army. The Army has processes for budgeting and programming resources that follow cycles. Within these cycles Army "Agents" are chartered, structured and funded to build specific war fighting capabilities that support the war fight. When an un-programmed requirement emerges, it means that resources are cut from an Agents program. It is incumbent on Army Leadership to articulate the resource priorities so that the Army Staff can adjust resources to support emerging capabilities. This was the case with EW. It was not easy or pretty but it was done.

From the onset it was apparent that this effort would require a realignment of resources within the Department. It was evident that this effort could potentially jeopardize existing Programs of Record in the Pentagon's zero-sum resourcing game. Operational necessity had created an environment where "rice bowls" had to be broken to achieve the greater good for the Army. It was imperative that the Army's Senior Leadership demonstrate a clear, unambiguous commitment to seeing this change through.

The Chief of Staff of the Army (CSA) provided the needed anchor of support by fully and publically stating his commitment to making the needed changes. He then backed that statement up with the allocation of significant Army resource to the effort. Subsequently, other Army leaders contributed to the development of the necessary operational vision for EW in the Army. This vision articulated the objective of attaining EW control across the full spectrum of conflict through the development of capabilities to control, detect, locate, attack, or defend against adversary EW threats. The end-state envisioned is a Brigade Combat Team (BCT) with the capability to dominate the EMS in any type of deployment environment.

Managing EW Restoration

The first step toward rebuilding EW capability to accomplish this vision was taken in the establishment of an EW advocate at the Army Staff level. In May 2006, the VCSA directed the Army G-3/5/7 to take the lead for establishing EW as an enduring core military competency in the Army. Pursuant to that directive, the Army EW Division (AEWD) was established under the DA G3/5/7 Operations Directorate, and tasked with policy development for oversight of achieving the Army EW vision.

Subsequently, AEWD served as the Army Staff lead and advocate for EW within the Army Staff and in conference with the other Services for developing and institutionalizing EW policy, resources, programs, force structure and priorities. In its assigned role, it has executed primary staff responsibilities for creating the administrative tools necessary for rebuilding EW, including the development of regulations and policies, together with processes for prioritization of resources related to EW. One of the initial AEWD priorities was developing solutions to short term gaps in EW capabilities in the Operation Iraqi Freedom and Operation Enduring Freedom theaters of conflict. This included working with the Navy and Air Force to obtain rapid deployment of EWOs as a stop-gap measure to support Land Forces on the ground in Iraq. The AEWD also responded to, and provided analysis to the ARSTAF on Operational Needs Statements (ONS) and Joint Urgent Operational Needs Statements (JUONS) related to EW.

One of the most effective expressions of the AEWD fulfilling role as EW advocate was the successful integration of EW into the Army Campaign Plan (ACP) 2008. ACP 2008 is the Army's authoritative document that sets the parameters for managing the grand vision of the Army's transformation strategies to their logical conclusions. Inclusion of EW in this document was a signal achievement that legitimized and institutionalized EW as a key component of modern land warfare and smoothed the way forward for future developmental initiatives.

In addition, the AEWD worked on the Army Staff to establish and staff ACP Decision Point (DP) 127. DP 127 officially infuses EW into a multitude of the Army's transformation processes; institutionalizing and focusing the collective efforts of the Army Staff on the tasks required attaining the Army EW vision. While the staffing of DP 127 is still progressing, its presence in the Campaign Plan has institutionalized the Army leadership's commitment to making EW a core military capability. DP 127 has also served to inform the rest of the Army stakeholders of their responsibilities to develop and operationalize Army EW.

AEWD reached another significant landmark with publication of Army Regulation (AR) 525-22 EW Policy in August 2008. This regulation established the requirement for Army Commanders to fully integrate EW as a combat capability into the unit's readiness and operations as a core competency. AR 525-22 defines the EW roles of Army HQ staff elements, Army Commands, Army Service Component Commands and Direct Reporting Units. It also updates, references and synchronizes Army EW policy with Joint EW policies.[3]

Hand in glove with the effort to ensure that EW received the appropriate level of focus and priority, the Army leadership reestablished the Senior EW Council (SEWC). The DA G3/5/7 and AEWD use the SEWC to coordinate and synchronize the Army EW Community of Interest (COI) at the three-star level. Chaired by the DA G3/5/7, other members of the SEWC include the DA G1, G2, G6, Office of the Chief, Army Reserve (OCAR), the National Guard Bureau (NGB), TRADOC's Army Capabilities Integration Center (ARCIC), the Combined Arms Center (CAC), and U.S. Army Space Missile Defense Command (SMDC)/ U.S. Army Forces Strategic Command (ARSTRAT).

This forum allows individual EW COI stakeholders a forum to which they can bring EW issues and concerns to the collective body for resolution. EW COI representatives can inject an issue into the SEWC

process at the DA EW Council of Colonels (CoC) level. The intent is to resolve the issue at the lowest possible level. Unresolved issues move on to the one/two star level EW General Officer Steering Committee (EW GOSC). If necessary, still unresolved issues are elevated to the SEWC for final resolution. The outcome of this SEWC methodology are Army EW policies that have been thoroughly discussed, debated, staffed, coordinated, synchronized and informed by the EW COI and the best EW minds in the Army.

Another critical AEWD accomplishment was the successful establishment of the EW funding line item in the Army Program of Management (POM). This funding line is the foundation for providing recurring funding stability and continuity to EW capability development efforts. This POM line-item recognition provides the Army with a mechanism to maintain existing Counter Radio Controlled Improvised Explosive Device Electronic Warfare (CREW) systems. It also establishes a mechanism to acquire future EW capability. Ultimately, the establishment of this POM line will provide the institutional resourcing for the procurement, fielding and sustainment of future Army EW systems.

Establishment of the EW Proponent

Another critical component of re-institutionalizing EW within the Army was to harness the combat development capabilities of Training and Doctrine Command (TRADOC) on rebuilding EW capability. To accomplish this, in March 2003, the DA G3/5/7 issued a Memorandum directing the establishment of an EW proponent at TRADOC. [4]

Later, on 23 Nov 2004, then TRADOC Commander, GEN William S. Wallace further designated the Combined Arms Center (CAC) at Fort Leavenworth, Kansas, as the specified U.S. Army EW Proponent (USAEWP). This Memo tasked USAEWP to develop Army EW combat capabilities following TRADOC's DOTMPF process. The USAEWP charter included decision authority to: synchronize, integrate and coordinate EW with modularity and future force requirements; scope the future Army EW capabilities development efforts; and, integrate EW across the Army and Joint, Interagency, Intergovernmental and Multinational (JIIM) constructs.[5] In October of 2006 the DA G3/5/7 published a Memorandum further clarifying and reinforcing the proponent mission by specifying 18 tasks required to institutionalize EW as an Army core competency.[6]

To ensure the USAEWP was resourced for success, the DA G3/5/7 tasked the Combined Arms Center (the higher headquarters of USAEWP) to initiate a Concept Plan articulating USAEWP personnel requirements. The subsequent approval of this Concept Plan established 9 military and 33 DA Civilian positions in the proponent, implementation of which is still ongoing.[7] (The short term manning gap is currently being filled by mobilized reserve Soldiers and contracted manpower.)

Upon activation, USAEWP began to lay the institutional foundations for an enduring Army EW combat development capability. Among the first such initiatives was finding the proponent a home. This was done by refurbishing facilities at Fort Leavenworth, Building 391, a historic building formerly used as a horse stable. The renovation included office space for the proponent and space for development of capabilities at classified levels. The investment in this facility as a permanent home for the Army EW Proponent demonstrated from

the outset the Army's commitment to establishing long term EW capabilities. Such a visible demonstration of Army commitment to EW was expected to help USAEWP attract and keep the most talented EW professionals. Attracting institutional subject matter expertise is necessary over time to geometrically increase the quality of Army EW capabilities.

In August of 2008, responsibility for development of Computer Network Operations was added to the USAEWP charter by Combined Arms Center Commander, LTG William B. Caldwell, IV, and the proponent was formally re-designated as the U.S. Army Computer Network Operations and Electronic Warfare (USACEWP).

Later, in an effort to make CAC's EW and CNO capability development more efficient, USACEWP was subsumed under the CAC Capabilities Directorate for Integration Development (CDID) in February 2009 and re-designated as the TRADOC Capabilities Manager-Computer Network Operations and Electronic Warfare (TCM-CEW) Division. CDID now serves as the focal point for managing all aspects of cyberspace and electronic warfare (EW) development for the Army. With a specific task of ensuring each are nested within FM 3.0 capstone doctrine to ensure full integration of into battlefield planning. As such, it currently serves as the vanguard for leading the Army into the future by building DOTMLPF bridges for both EW and Cyber-electronics to help prepare Soldiers and their leaders to operate effectively in an information age environment.

With regard to EW, the CDID is currently focused on development of the necessary doctrinal integration tasks; incorporation and continually updating EW training based on war fighter lessons learned; and the development and resourcing of toolsets for EW war fighters in the field. The technical nature of this field requires a significant amount of technical and operational subject mater expertise (SME). This is particularly important when addressing the material needs for planning tools, automated decision aids, data base and configuration management tools.

Updating EW Doctrine, Policy, and Regulatory Guidance

Among the first pressing requirements CAC undertook in its capacity as EW proponent was update and development of new EW doctrine. Doctrine is the driving force behind all combat operations in the US Army. It is the glue that binds an Army of individuals with different skill sets into a unified and cohesive force that works in concert together to achieve common objectives.

In February 2008 the Chief of Staff of the Army signed Field Manual 3-0, *Operations*. This cornerstone Army operational doctrine replaced FM 100-6. It significantly changed the way the Army approaches combat, especially with regard to the prominence given information and the information tasks. In consonant with transformational thinking, Chapter 7 of the new FM 3-0, requires the integration and execution of EW as a measurable and actionable non-kinetic application of combat power. It clearly articulates that EW is properly employed with conventional Fires to support maneuver, as well as employed to disrupt and destroy enemy command and control. The overall objective is to harness informational tasks and techniques to provide the

Commander with a graduated set of lethal and non-lethal capabilities to apply across the range of military operations as needed to attain specific mission objectives.

For each of its major combat capabilities, the Army publishes a Concept Capability Plan (CCP). Setting the stage the development of needed doctrine, the EW proponent was instrumental in the August of 2007 publication of TRADOC Pamphlet 525-7-6 CCP for Army Electronic Warfare Operations for the Future Modular Force 2015-2024[8] (EW CCP). The EW CCP drew its key ideas and required capability statements from existing Army and joint operational concepts. This helped establish the foundation for the development of future EW doctrine in the modular force.

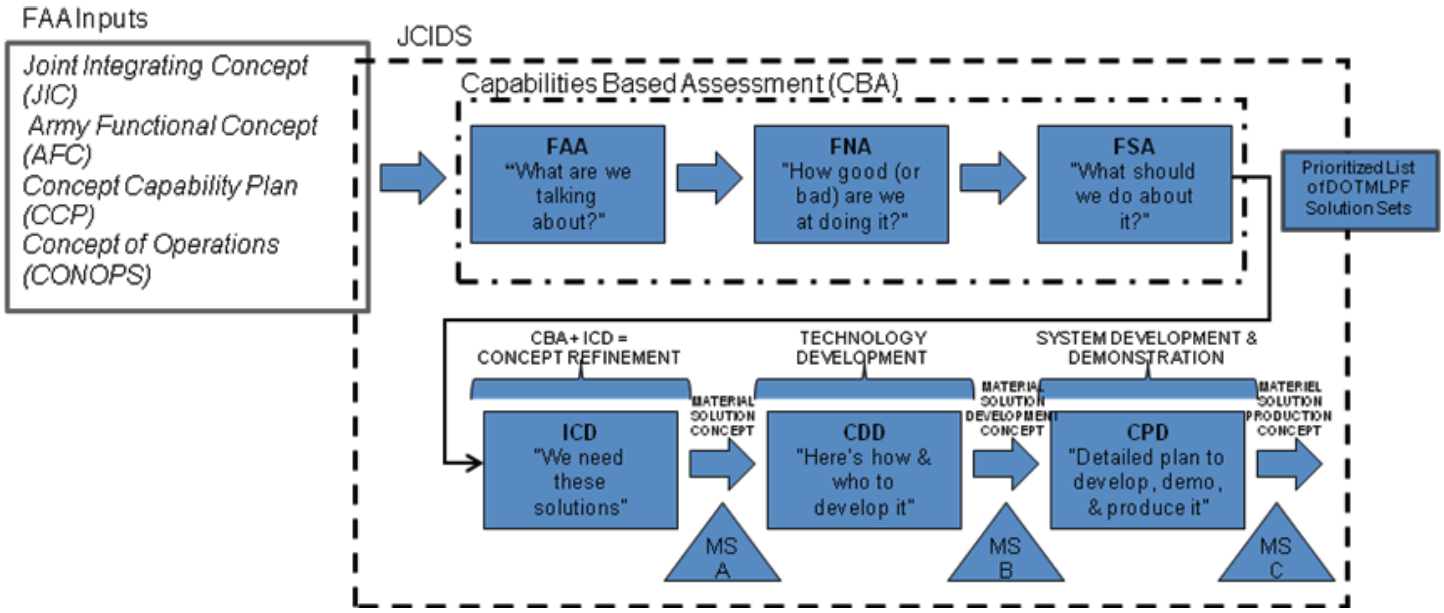
The EW CCP demonstrates how EW capabilities should be applied and employed across the warfighting functions. It defines EW as any action involving the use of electromagnetic (EM) or directed energy to control the electromagnetic spectrum (EMS) or to attack the enemy. Maintaining consistency with Joint Publication 3-13.1, the EW CCP breaks EW down into the component parts; Electronic Attack (EA), Electronic Protect (EP) and Electronic Warfare Support (ES). This subdivision of EW allows for a finer focus on the required capabilities of each subcomponent. These individual capabilities can then be rebuilt into a comprehensive, integrated EW capability supporting the EW vision.

Coincident with these efforts to develop policy and guidance impacting doctrine, the EW proponent initiated a re-write of Field Manual (FM) 3-36, *Electronic Warfare in Operations*, to update and further refine guidance for rebuilding and applying Army EW capabilities in the field. FM 3-36 was formally published in February 2009 and is now the Army's cornerstone doctrine for EW. Doctrinal development effort in this area nests Army EW doctrine within the Joint Doctrine EW construct, while leveraging joint EW capabilities in support of the land component commander.

Building EW Actual Capabilities

As this new doctrine was being written, the EW proponent embarked on perhaps the most far reaching EW combat development initiative to date: the EW Capabilities Based Analysis (CBA). In August 2007, LTG John M. Curran, then Director of ARCIC, signed an EW Integrated Capabilities Development Team (EW ICDT) charter tasking the EW proponent to conduct an EW CBA.[9] A CBA is one of the most rigorous combat development analytic activities a specified proponent can undertake. Moreover, it is normally a considered a two year analytical process. However, the compelling operational need for rapid fielding of EW capabilities resulted in the EW CBA tasking to be condensed to one year. And, irrespective of the compressed timeframe, the EW ICDT was still required to follow the normal TRADOC CBA process deriving a complete Doctrine, Operations, Leadership, Training, Materiel, Personnel, and Facilities (DOLTMPF) assessment. Subsequently, using the EW CCP as its logical foundation, USACEWP has led Army EW stakeholders in the effort to identify required EW capabilities. The EW CBA was conducted in conjunction and close coordination with a STRATCOM EW CBA. The latter study, conducted by the Joint EW Center (JEWC), identified and validated a number of gaps in existing Joint EW capabilities. To date, the CAC-managed EW CBA analysis has identified

gaps consonant within the STRATCOM analysis and is currently pending further review. Figure 1 is a graphic description of the components of the Army CBA effort.



FAA – Functional Area Analysis
FNA – Functional Needs Analysis
FSA – Functional Solution Analysis
ICD – Initial Capabilities Document
CDD – Capabilities Development Document
CPD – Capabilities Production Document

Figure 1: TRADOC CBA Process

Another key EW proponent initiative has been development of the EW Force Design Update (FDU). For reasons previously mentioned, and out of necessity the Army has been forced to turn to the Navy and Air Force to supply the Electronic Warfare Officers (EWO) to meet immediate OIF/OEF requirements. Recognizing that this augmentation was only a short-term fix, the Army leadership directed the EW proponent to initiate an EW Force Design Update (EW FDU) for the purpose of building sufficient organic EW capability. The resulting FDU findings have specified required force structure changes to provide EW planning, coordination, integration, synchronization, and execution capabilities at each Army echelon. Additionally, this EW FDU has proposed the creation of new officer, warrant and enlisted EW career fields and identified generating force EW personnel requirements for sustainment training. The FDU also identified Reserve Component as well as DA Civilian EW requirements.

Based on EW proponent and COI analysis, the EW FDU identified a total of 3,776 EW requirements across the Army. The EW FDU was presented to the VCSA during the DP 127 briefing where he approved it for competition in the Total Army Analysis (TAA) for years 2010-2015. Subsequently, personnel requirements were approved as recommended to be implemented through four phases, with completion in FY 11. Concurrently, new EW career fields for officers, warrant officers, and enlisted personnel were approved (FA/

MOS 29) on 26 January 2009, with initial approved fill for 1,664 positions. Fully implemented, the EW FDU will establish EW capabilities within Army Service Component Command (ASCC) down through to battalion-level.

Anticipating training needs for personnel fill over the next several years, CDID has instituted and coordinated an aggressive program to reinitiate EW training across the Army. Achieving the Army Leadership's goal of making EW a core war fighting capability means that every Soldier – from private to general officer – must have some level of education in and understanding of electronic warfare. Consequently, CDID is in the process of helping build appropriate level training plans aimed at providing every Soldier a basic block of instruction in EW while attending resident schools. To meet pressing immediate needs for combat theaters, the CAC EW proponent initially worked with other TRADOC Center's of Excellence (CoE) to develop and certify two EW Additional Skill Identifier (ASI) courses:

- A six-week long Army Operational EW Course taught at the Fires CoE at Fort Sill which trains resulting in award of the "1J" ASI. This course provides the student with a fundamental understanding in the principles of EW and an understanding of the EW staff planning process. Graduates have a working knowledge of EW and how to integrate it into combat operations;
- A 3-week Tactical Practitioner EW Course taught at Fort Huachuca. This course results in the award of the 1K ASI and is focused on providing a more technical understanding of how to operate currently fielded EW systems in the combat environment.

As part of the longer term institutional training vision to reestablish a core of Army EWO's, a pilot version of a new officer Functional Area (FA29) EW Officer Qualification course was been developed. Subsequently, the first Army EWOs in more than a decade graduated from the first iteration of the pilot course in August 2008. ***A second FA 29 pilot course is currently being conducted at the Fires Center of Excellence at Fort Sill, Oklahoma, with a third and final pilot scheduled to begin 29 Jun 2009. Similarly, pilot courses for both EW Warrant Officers and Enlisted personnel are being planned, with initial iteration scheduled to begin in April 2009.***

Materiel Requirements

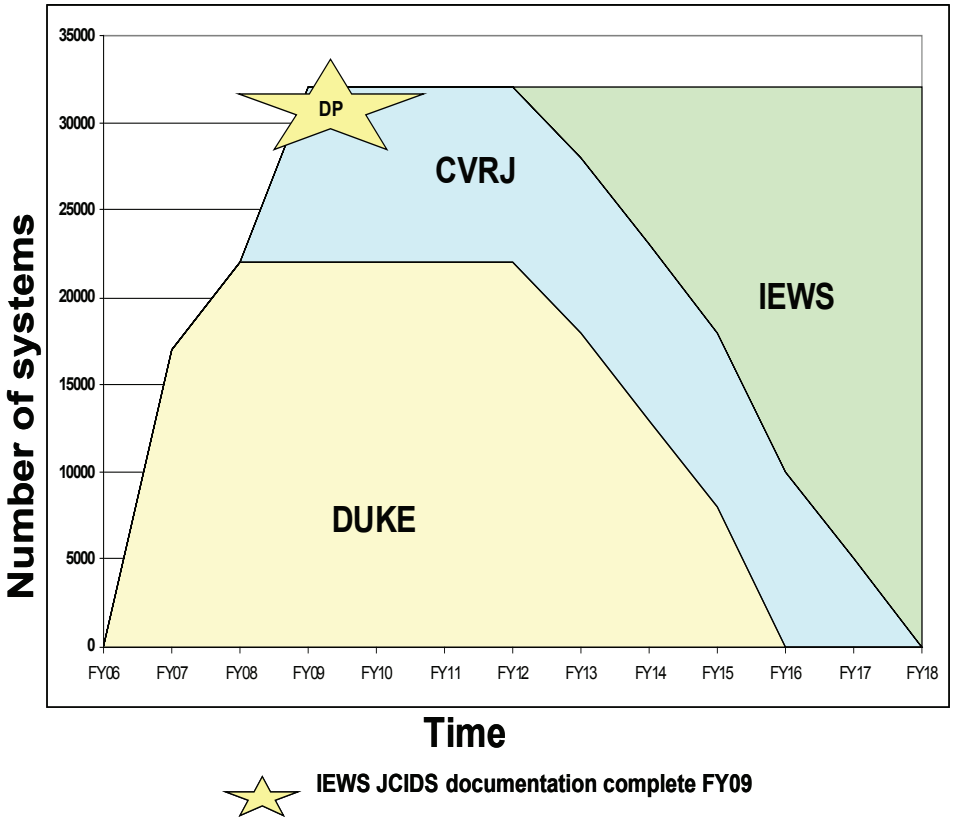
Responding to an immediate need for a field EW capability, Coalition forces were issued and have come to rely heavily on the Counter Radio Controlled Improvised Explosive Device Electronic Warfare (CREW) and Joint CREW family of systems for force protection. CREW and JCREW systems are specifically designed for platform self-protection against RCIEDs. CREW systems have been hugely successful in reducing the numbers of coalition force casualties. However, Army experience has demonstrated that the CREW system fills only a portion of the full EW requirement on the battlefield.

Among the requirements needed, the collective EW COI have specified a requirement for an EW system with fully integrated Electronic Attack (EA), Electronic Protection (EP) and Electronic Warfare Support (ES) capabilities to operate successfully on the future EW battlefield. This analysis was further corroborated by the

recently published STRATCOM EW CBA. The design of CREW as a single purpose box has spurred the Army to begin developing a concept for a new EW capability.

The Army EW Leadership envisions the development of a single integrated EW System of Systems (SoS) supporting the future modular force Commander. This system will provide him with a toolset to conduct operations in and through the EMS. While waiting specific EW CBA output, CDID is working with the Army, Joint and industry communities of interest to develop a concept for an integrated electronic warfare system (IEWS). The IEWS concept is based on currently known EW requirements, emerging gaps identified in both the Joint and Army CBA efforts, and current operational requirements imitating from the operational theaters. The IEWS is intended to be fully integrated with Future Combat System (FCS) and capable of functioning in a stand alone configuration. The IEWS concept will incorporate Army and Joint compatible architecture, addressing ES and EA components, command and control, and interoperability with existing co-users of the electromagnetic spectrum.

One of the critical outputs of the EW CBA process will be the clearly defined requirements for the IEWS. These identified gaps will generate Joint Capabilities Integration Development Systems (JCIDS) documents defining specific requirements for the proposed new land component IEWS. Anticipating this, the Army is positioning itself to rapidly push the acquisition process to procure and field the IEWS. Figure 2 is a graphic depiction of the Army's plan to transition from the currently fielded Duke CREWS systems and CREW Vehicle Receiver/Jammer system to the full implementation of the IEWS.



Another important operational requirement demanding the Army Staff's attention is the impending loss of Navy Airborne Electronic Attack (AEA) support. Due to airframe obsolescence, our Navy EW partners are scheduled to take existing legacy 18 Prowler Squadrons flying EA-6B aircraft out of service by 2013. They intend to replace these assets with 10 EA-18B Growler Squadrons specifically created to provide direct support to the 10 existing carrier groups. In the past, the 8 non-carrier based Prowler squadrons provided a large portion of the EA support to land force operations. Unfortunately, under the new Navy operational construct, EA support to land component forces will no be significantly curtailed if not eliminated entirely. Additionally, the Navy has announced its intent to end its electronic warfare officer (EWO) and enlisted support to OIF/OEF by the end of 2012. These two events, taken together and left unaddressed, will create an EW capability gap for the Army and have a significant impact on the current fight. Given these circumstances, the Army is pressing hard to complete the EW CBA in order to begin training Army and Joint EWOs as fast as possible.

From a facilities and sustainment perspective, CDID has made significant progress in developing the Army's EW generating force capability. The years without a senior advocate steering EW combat development has diffused and disorganized this capability in the Army. Roles and responsibilities became confused and often duplicative. Last June, the CAC EW proponent brought EW stakeholders together to clarify who was doing what in terms of EW combat development; to define lanes in the road; and reach a consensus among the pertinent Center of Excellence (CoE) Commandants on the EW way ahead. Figure 3 is a graphic representation of the starting point for these discussions. The outcome of this effort is a published in a CAC OPORD 08-231a Electronic Warfare Roles and Responsibilities. This OPORD designates CAC as overall integrator of EW combat capabilities; supported by the Fires, Intelligence, and Signal CoEs together with other non-TRADOC combat developers on specific aspects of EW. This OPORD provides guidance for leveraging joint and COE facilities, ranges, and battle labs to synchronize capabilities development across EW tasks in support of EW combat development efforts.

Electronic Warfare Roles and Responsibilities

(Original CAC Recommendation)

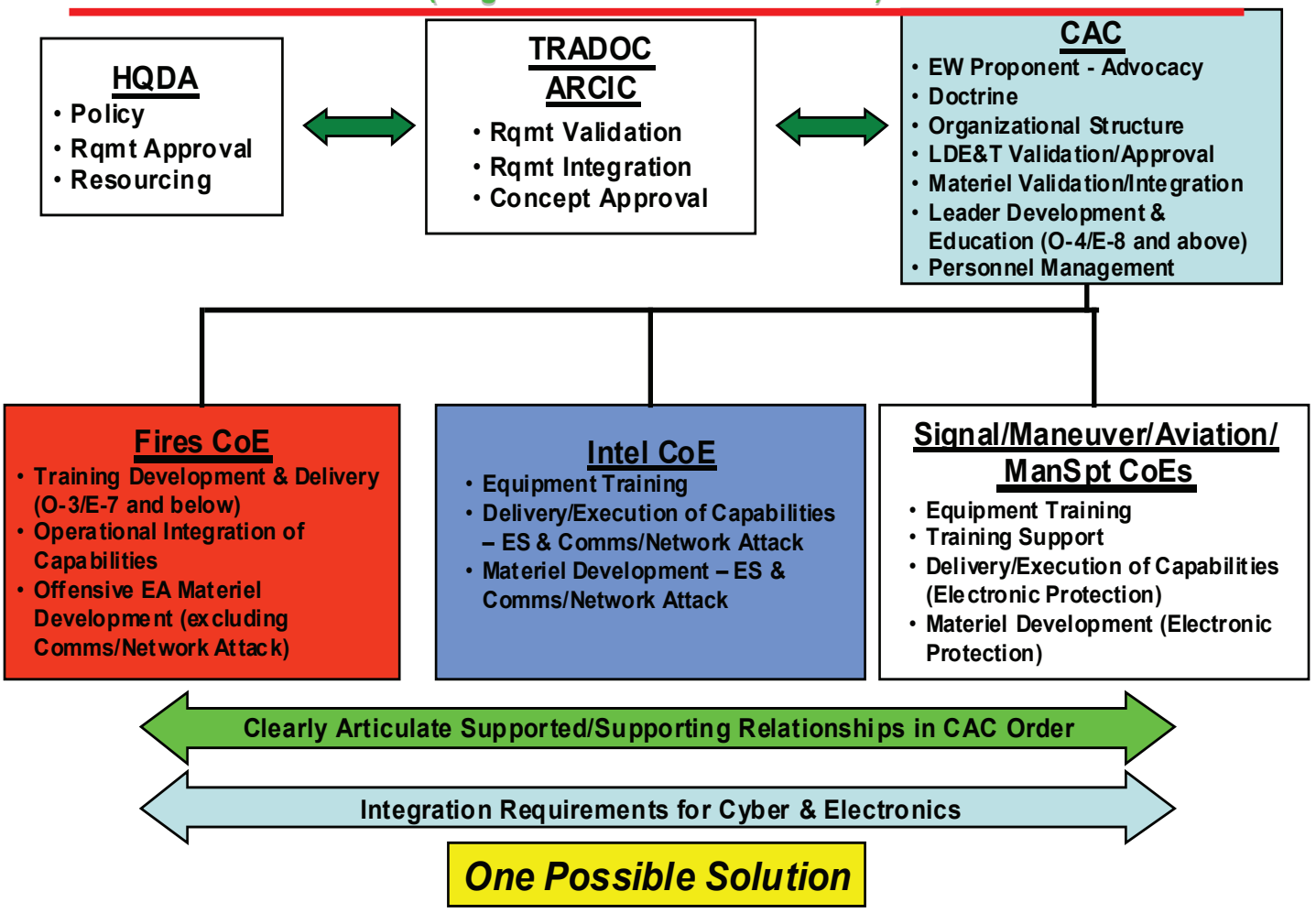


Figure 3

In pursuing the realization of the Army senior leader's EW vision, the Army has made the institutional and resource commitments necessary to deliver enduring EW capabilities to the commander. As these newly developed EW capabilities are fielded and mature across the force, it is imperative that the entire community to work together to effectively coordinate and synchronize these efforts. The land component commander's ability to dominate enemy actions in the EMS is critical to future battlefield success. The Army must provide field commanders with the necessary tools for planning, integration, and execution of kinetic and non-kinetic effects throughout the range of military operations. We must plan, organize and train with EW assets on a routine basis. The Army must never again allow a commander and the Soldiers in their command to enter a combat environment without fully understanding what is necessary to fight and win in that electromagnetic spectrum.

End Notes

1. Memorandum From LTG Peter Chiarelli, CG, Multinational Forces Iraq (MNCI) Thru Cdr CFLCC, To GEN Cody, VCSA, (SECRET/REL USA, AUS, CAN, GBR) Subject:Electronic Warfare (EW) Support to Operation Iraqi Freedom, dtd: 04 Aug 07

2. Memorandum From GEN Cody, VCSA, to Cdr MNCI, Subject: Electronic Warfare (EW) Support to Operation Iraqi Freedom, dtd 6 Sept 2007

3. Army Regulation (AR) 525-22 US Army Electronic Warfare, 14 August 2008, Summary of Changes

4. Memorandum From DA G3/5/7 to Cdr TRADOC, Subject: Electronic Warfare Proponent, dtd: 31 Mar 03

5. Memorandum From GEN Walace to Cdr CAC, Subject: Electronic Warfare (EW) Specified Proponent Implementation Plan, dtd: 23 Nov 04

6. Memorandum From DA G3/5/7, LTG Lovelace, to TRADOC Cdr, Subject: Army Electronic Warfare (EW) Proponent Tasks, dtd: 23 Oct 2006

7. Memorandum For Commanding General, U.S. Army Training and Doctrine Command, Subject: U.S. Army Electronic Warfare Proponency (USAEWP) Concept Plan (CP), dtd. 10 Apr 05

8. TRADOC Pamphlet 525-7-6, Capability Concept Plan, Army Electronic Warfare Operations for the FutureModular Force 2015-2024 (EW CCP), 16 August 2007

9. Integrated Capabilities Development Team – Electronic Warfare Charter, dtd: 7 Aug, 2007

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